THE RELATIONSHIP BETWEEN INTEREST OF LEARNING AND INTERCOMMUNICATION OF PEER TOWARD MATHEMATICS LEARNING OUTCOMES IN CLASS VIII

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ABSTRACT

Low learning achievement of mathematics students related to a variety of factors. The interest of learning and intercommunication of peers are two factors allegedly related to the student's mathematics learning outcomes. This research aims to know if there is a positive and significant relationship between the interest of learning and intercommunication of peers toward mathematics learning outcomes in class VIII State Junior High School 2 Gamping Sleman (SMP Negeri 2 Gamping Sleman) of odd semester academic year 2017/2018. The population in this research was all class VIII students in SMP Negeri 2 Gamping Sleman of odd semester academic year 2017/2018, which amounts to 192 students and divided into six classes. Function random sampling technique to class to take a sample class, to obtain class VIII E as a trial class and class VIII F as a research class. Data collection techniques are done with the questionnaire method and the test method. The research instruments used questionnaire interest of learning, questionnaire intercommunication of peer, and learning outcomes test. The instruments test used tests of validity, different power, and reliability testing. Analysis of instrument trials using the normality test, independent test, and linearity test. Data analysis using simple correlation analysis and multiple regression analysis. The results showed a positive and significant relationship between the interest of learning and intercommunication of peer toward mathematics learning outcomes with multiple regression equation $\hat{Y} = -0{,}26681 + 0{,}3980X_1 + 0{,}3679X_2$ and the multiple correlation coefficient (R) is 0,4544. And obtained $F_{hitung} = 3{,}773$ and $F_{tabel} = 3{,}33$, so $F_{count} > F_{table}$. Donation are relatively $(X_1) = 58{,}3\%$ and $(X_2) = 41{,}7\ \%$, with multiple determination coefficient of $0{,}206$ and the effective contribution $(X_1) = 12{,}28\ \%$ and $(X_2) = 8{,}78\ \%$.

Keywords: Interest of Learning, Intercommunication of Peer, Mathematics Learning Outcomes.

INTRODUCTION

Education has the most significant role in improving human resources because education can improve intelligence, skills, and human personality. Of all levels of formal education available, mathematics is a subject that must be studied at all levels of school. Because mathematics is basic science and has an important role in everyday life. Mathematics is one of the subjects included in the National Examination. However, some students assume that mathematics is a complicated subject that results in the low learning outcomes of students' mathematics. The low learning outcomes of mathematics can be seen from the Daily Mathematical Data of Grade VIII students of SMP N 2 Gamping Sleman Regency Odd Semester Academic Year 2017/2018.

Table 1. Daily Test Data for odd semester In Class VIII of SMP N 2 Gamping in 2017/2018

Class VIII	Value < 75	Value >75	Total students
A	0	32	32
B	0	32	32
C	0	32	32
D	0	32	32
E	0	32	32

Class VIII	Value < 75	Value >75	Total students
F	0	32	32
Percentage	0%	100%	192

(Source: SMP Negeri 2 Gamping Kabupaten Sleman)

The table above shows that student learning outcomes are under Minimal Completeness Criteria (MCC). According to mathematics teacher class VIII, students 'mistakes in working on math problems are partly due to the low willingness of students to demand knowledge and lack of students' understanding of some of the material being taught. Based on interviews with 15 students of Gamping 2 Middle School on August 15, 2017, saying that mathematics is a lesson that is not easy to understand, students prefer to play in spare time rather than learning mathematics. This causes students' interest in learning towards mathematics to be low or even nonexistent. Based on the interviews with Ibu Suhartini, a mathematics teacher at SMP N 2 Gamping, Sleman district, the peer group at SMP N 2 Gamping, Sleman district, was good. There was no bullying, but it could not be made a good study partner. Students were still often noisy- making noise and inviting friends to talk in class compared to paying attention to the lesson during the teaching and learning process so that the learning process is disrupted.

Based on the background of the problem, the formulation of the problems that can be taken in this study are:

1. Is there a positive and significant relationship between interest in learning and mathematics learning outcomes for students of class VIII odd semester of SMP Negeri 2 Gamping, Sleman Regency.
2. Is there a positive and significant relationship between peer relationships with mathematics learning outcomes of students of class VIII odd semester of SMP Negeri 2 Gamping, Sleman Regency.
3. Is there a positive and significant relationship between learning interest and peer relations with mathematics learning outcomes of students of class VIII odd semester of SMP Negeri 2 Gamping, Sleman Regency.

Based on the problem formulation, the objectives of this study are to:

1. It knows whether there is a positive and significant relationship between interest in learning towards mathematics learning outcomes of Grade VIII students of SMP Negeri 2 Gamping Sleman district in the odd semester of the academic year 2017/2018.
2. It knows whether there is a positive and significant relationship between peers associations with mathematics learning outcomes of eighth-grade students of SMP Negeri 2 Gamping Sleman district in the odd semester of the academic year 2017/2018.
3. Determine whether there is a positive and significant relationship between learning interest and peer interaction with mathematics learning outcomes of students of class VIII SMP Negeri 2 Gamping Sleman district in the odd semester of the academic year 2017/2018.

METHODS

This type of research is quantitative research. This study aims to determine whether there is a relationship between learning interest and peer interaction with the mathematics learning outcomes of students of class VIII odd semester of SMP Negeri 2 Gamping, Sleman Regency in the academic year 2017/2018. The design of the interrelationship between the independent variable and the dependent variable in this study is organized as follows:

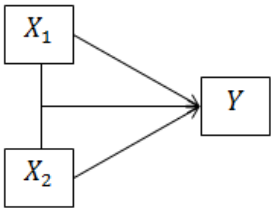

Figure 1. Schema of the Relationship between Free Variables and Bound Variables

Information:

X_1: Interest to learn

X_2: Peer Association

Y: Mathematical Learning Outcomes

The study was carried out at Gamping 2 Junior High School in Sleman Regency, and the subject of the research was eighth-grade students of SMP Negeri 2 Gamping Sleman Regency. The research was conducted in the odd semester of the academic year 2017/2018. The population in this study were all VIII grade students of SMP Negeri 2 Gamping Sleman Regency in the odd semester of the academic year 2017/2018 consisting of 6 classes, namely classes VIII A to VIII F. The number of class VIII students was 192 students. Sampling in this study using random sampling techniques to the class. The lottery obtains the sampling class. After the draw was selected for the sample, class VIII F, with a total of 32 students, this study has three variables consisting of two independent variables and one dependent variable. The independent variable is the interest in learning (X_1) and peers (X_2) for the dependent variable that is the result of learning mathematics (Y).

Data collection methods are needed in researching so that the data obtained is relevant to the objectives and subject matter of the discussion. In this study, the data collection methods used were questionnaires (questionnaires) and tests. This study used a closed questionnaire that is used to obtain data about learning interest and peer grouping of students of class VIII odd semester 2 Gamping Middle School Sleman district in the 2017/2018 school year. While the test is used to obtain data on mathematics learning outcomes. The test used is multiple choice with four alternative answers, namely a, b, c, or d, and if the correct answer is one and false is 0. Analysis of the questionnaire instrument trials and tests using content validity tests by reviewers and product-moment correlation techniques (Arikunto, Suharsimi, 2013: 213) using the formula:

$$r_{xy} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{\{N \sum X^2 - (\sum X^2)\}}\sqrt{\{N \sum Y^2 - (\sum Y^2)\}}}$$

with:

$_{proxy}$ = correlation coefficient between variables X and Y

N = the number of respondents

X = X score obtained from respondents

Y = the total Y score obtained from the respondent

For the discriminating power test uses the discrimination index formula (Arikunto, Suharsimi: 1981):

$$D = \frac{B_A}{J_A} - \frac{B_B}{J_B} = P_A - P_B$$

with:

B_A = many top groups answered correctly

B_B = the number of groups below who answered correctly

J_A = the number of subject groups above

J_B = the number of subject groups above the number of subject groups below

P_A = the proportion of the upper group who answered correctly

P_B = the proportion of the lower classes who answered correctly

While the questionnaire instrument reliability test uses the Alpha Cronbach formula (Arikunto, Suharsimi: 2013)

$$r_{11} = \frac{k}{(k-1)}\left\{1 - \frac{\sum \sigma_b^2}{\sigma_t^2}\right\}$$

with:

r_{11} = research instrument reliability

σ_b^2 = i-th item variance

σ_t^2 = total variance
k = the number of statement items or items
n = the number of respondents

and tests using the KR-20 formula (Arikunto, Suharsimi: 2013)

$$r_{11} = \frac{k}{k-1}\left(\frac{V_t - \sum pq}{V_t}\right)$$

with:

r_{11} = overall test reliability
k = the number of statement items or items
V_t = total variance
p = the proportion of subjects who answer correctly
q = the proportion of subjects who answer incorrectly

After the data has been collected, descriptive data analysis, analysis prerequisite tests, and hypothesis testing are performed. Analysis prerequisite tests that must be met include normality tests using the chi-square formula (Khasanah, Uswatun, 2014: 8). independent test, and linearity test. To test the hypothesis used t-test and F-test. For t-test (Khasanah, Uswatun, 2014: 60) using the formula:

$$t_{count} = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

With:

r= correlation coefficient
n= number of samples

For the F-test (Khasanah, Uswatun: 2014) using the formula:

$$F = \frac{R^2(n-p-1)}{(1-R^2)p}$$

With:

F= F price regression
R^2= coefficient of double determination
n= sample size
p = number of free variables

RESULTS AND DISCUSSION

1. Description results of research

   Interest to learn. Student interest in class VIII F of SMP Negeri 2 Gamping Sleman Regency in the odd semester of the academic year 2017/2018 is included in the medium category because the highest frequency lies in the interval $57{,}241 \leq X < 68{,}884$, as many as ten students or 31.25%. Peer Association. Peer association of VIII F grade students of SMP Negeri 2 Gamping Sleman Regency in the odd semester of the academic year 2017/2018 is included in the medium category because the highest frequency is located at an interval of 58,664≤ X <70,336, i.e., as many as 14 students or 43.75%. Mathematical Learning Outcomes. Mathematics learning outcomes of class VIII F odd semester of SMP Negeri 2 Gamping Sleman Regency in the semester of 2017/2018 academic year is included in the medium category because the highest frequency is located at intervals of 37.549 < X <51.889, namely 15 students or 46.875%.

2. Normality Test Results

   Based on the normality test, it was found that the variables of interest in learning, the variables of peer interaction, and mathematics learning outcomes variables were normally distributed. The results of the three variables normality test can be seen in table 2.

Table 2. Normality Test Results

Variable	χ^2_{count}	χ^2_{table}	df	Information
Interest to learn (X_1)	0,44972	11,0705	5	Normal
Peer Association (X_2)	1,85285	11,0705	5	Normal
Mathematical Learning Outcomes (Y)	8,07507	11,0705	5	Normal

3. Linearity Test Results

The variables of interest in learning, the variables of peer interaction, and the variables of linear mathematics learning outcomes were found based on the linearity test. Linearity test results can be seen in table 3.

Table 3. Linearity Test Results

Variable	F_{count}	F_{table}	Information
X_1 with Y	0,9903	2,66	Linear
X_2 with Y	$-0,2095$	2,35	Linear

4. Independence Test Results

Based on the independence test, it was found that the variable of interest in learning and peer interaction was independent of each other. The independence test results can be seen in table 4.

Table 4. Independence Test Results

Variable	χ^2_{count}	χ^2_{table}	df	Information
X_1 and X_2	28,4089	37,6525	25	Independent

5. Hypothesis Test Results

a. Testing the first hypothesis. In testing the significance of the correlation coefficient by using t-test obtained t_{count}= 2,1719 while t_{table}= 1,6973 at a significant level of 5% and v = n – 2 = 32 – 2 = 30. So we get $t_{count} > t_{table}$, so $H_{0.1}$ rejected and $H_{1.1}$ accepted, so there is a positive and significant relationship between learning interest in mathematics learning outcomes for students of class VIII of SMP Negeri 2 Gamping, Sleman Regency in the odd semester of the academic year 2017/2018. It also obtained a simple regression equation Y for X_1 is $\hat{Y} = 20,402856 + 0,44922X_1$.

b. Testing the second hypothesis. In testing the significance of the correlation coefficient using t-test obtained t_{count}= 1,8503 while t_{table}= 1,6973 at a significant level of 5% and v = n - 2 = 32 - 2 = 30. So we get $t_{count} > t_{table}$, so $H_{0.2}$ rejected, and $H_{1.2}$ accepted, so there is a positive and significant relationship between peer relationships with mathematics learning outcomes of eighth-grade students of SMP Negeri 2 Gamping Sleman Regency in the odd semester of the academic year 2017/2018. It also obtained a simple regression equation of Y over X_2 is $\hat{Y} = 20,043246 + 0,43767635X_2$.

c. Third hypothesis testing. In testing the significance of the correlation coefficient using the F-test obtained F_{count}= 3,773 while F_{table} = 3,33 at a significant level of 5% and v_1 = 2 and v_2 = 29. So that obtained $F_{count} > F_{table}$, so that $H_{0.7}$ is rejected and $H_{1.7}$ accepted, so there is a positive and significant relationship between learning interest and peer interaction with mathematics learning outcomes of students of class VIII SMP Negeri 2 Gamping Sleman Regency in the odd semester of the academic year 2017/2018. It also obtained the double linear regression equation X_1 and X_2 is $\hat{Y} = -0,26681 + 0,3980X_1 + 0,3679X_2$.

The results obtained are that there is a relationship between learning interest and peer relations with the mathematics learning outcomes of Grade VIII students of SMP Negeri 2 Gamping, Sleman Regency in the odd semester of the academic year 2017/2018. The following discussion about the results of the study:

1. The first hypothesis test result is that there is a positive and significant relationship between learning interest towards mathematics learning outcomes of Grade VIII students of SMP Negeri 2 Gamping,

Sleman Regency in the odd semester of the academic year 2017/2018. The higher the student's interest in learning, the higher their learning outcomes will be. The simple correlation coefficient (*r*) between learning interest towards mathematics learning outcomes of 0.3686 with the linear regression equation Y over X_1 is $\hat{Y} = 20{,}40285601 + 0{,}449228146X_1$. This means that any increase in X_1 increases $\hat{Y}$.

2. The second hypothesis test result is that there is a positive and significant relationship between peers associations with mathematics learning outcomes of eighth-grade students of SMP Negeri 2 Gamping, Sleman Regency in the odd semester of the academic year 2017/2018. In other words, the better the peer interaction, the better the math learning outcomes. The simple correlation coefficient (*r*) between peer interaction with mathematics learning outcomes of 0.32005 with a linear regression equation Y over X_2 is linear $\hat{Y} = 20{,}04324623 + 0{,}4376763587X_2$. This means that any increase in X_2 increases $\hat{Y}$.
3. The third hypothesis test result is that there is a positive and significant relationship between learning interest and peer interaction with mathematics learning outcomes of eighth-grade students of SMP Negeri 2 Gamping, Sleman Regency in the odd semester of the academic year 2017/2018. In other words, the higher the interest in learning, and the better the peer interaction, the higher the mathematics learning outcomes of students. The multiple correlation coefficient (*R*) between learning interest and peer interaction with mathematics learning outcomes is 0.4544 with the linear regression equation Y for X_1, and X_2 is $\hat{Y} = -0{,}26680775 + 0{,}397997238X_1 + 0{,}367888902X_2$. With a relative contribution of X_1 of 58.3% and X_2 of 41.7% and effective contribution of X_1 of 12.28% and X_2 of 8.78%.

Table 5. Relative Contributions and Effective Contributions between independent variables

Variable	RC	EC
Interest to learn (X_1)	58,3%	12,28%
Peer Association (X_2)	41,7%	8,78%
Total	100%	21,06

This shows that interest in learning provides the most significant relationship to learning outcomes in mathematics compared to peer relationships. After it is known that the interest in learning and peer interaction has a significant effect on student mathematics learning outcomes, the increase and decrease in student mathematics learning outcomes are related to high learning interest and good peer association.

CONCLUSION

Based on the results of the study, several research conclusions can be drawn as follows:

1. There is a positive and significant relationship between learning interest towards mathematics learning outcomes of VIII grade students of SMP Negeri 2 Gamping, Sleman Regency in the odd semester of the academic year 2017/2018. This is indicated by the t-test that is $t_{count} \geq t_{table}$ or $2{,}1719 > 1{,}6973$. Also, the linear regression equation is obtained $\hat{Y} = 20{,}40285601 + 0{,}449228146X_1$.
2. There is a positive and significant relationship between peers associations with mathematics learning outcomes of VIII grade students of SMP Negeri 2 Gamping Sleman Regency in the odd semester of the academic year 2017/2018 VIII SMP Negeri 2 Gamping Sleman Regency in the semester of the academic year 2017/2018. This is indicated by the t-test, namely $t_{count} \geq t_{table}$ or $1{,}85029 \geq 1{,}6973$. Also, the linear regression equation is obtained $\hat{Y} = 20{,}04324623 + 0{,}4376763587X_2$.
3. There is a positive and significant relationship between learning interest and peer relationships with the mathematics learning outcomes of Grade VIII students of SMP Negeri 2 Gamping Sleman Regency in the odd semester of the academic year 2017/2018. This is indicated by the F-test, which is $F_{count} > F_{table}$ or $3{,}773 > 3{,}33$. Also obtained by the linear line equation $\hat{Y} = -0{,}266807753 +$

$0{,}3979972388X_1 + 0{,}3678889028X_2$. The relative contribution of X_1 was 58.3%, and X_2 was 41.7%, and the effective contribution of X_1 was 12.28%, and X_2 was 8.78%.

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